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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,348	11/03/2003	Demitry Gorlik	774-A03-002	5259

27317 7590 12/28/2006

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EXAMINER	
CUTLER, ALBERT H	
ART UNIT	**PAPER NUMBER**
2621	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/700,348	GORLIK, DEMITRY	
	Examiner	Art Unit	
	Albert H. Cutler	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04/19/204*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because of a lack of clarity and precision in figures 2 and 2a. Consider figure 2, a focus camera "20" is listed in paragraph 0016 of the specification. However, the number "20" is absent from figure 2. Please place this number in the correct position on figure 2. Consider figure 2a, a C-mount "30" is listed in paragraph 0017 of the specification. However, the number "30" is absent from figure 2a. Please place this number in the correct position on figure 2a. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: Lack of clarity and precision due to typographical errors and improper reference numbers pertaining to the drawings.

Consider paragraph 0005, "knows" should be changed to "known" in order to make the 2nd sentence comprehensible. Appropriate correction is required.

Consider paragraph 0016, camera lens "F324" should be changed to camera lens "F3, 24" so that it corresponds with figure 2. Appropriate correction is required.

Consider paragraph 0016, lens "14" should be renumbered lens "24" so that it corresponds with figure 2. Appropriate correction is required.

Consider paragraph 0016, attachment optics "F226" should be changed to attachment optics "F2, 26" so that it corresponds with figure 2. Appropriate correction is required.

Consider paragraph 0016, microscope system "132" should be changed to microscope system "1, 32" so that it corresponds with figure 2. Appropriate correction is required.

Consider paragraphs 0037 and 0038. Reference is made to various numbers from 100-142. However, the location of these numbers in the drawings is not referenced. Upon further examination, the examiner has found that these numbers are all contained in figure 5 of the drawings. Please make reference to figure 5 in paragraph 0037 and/or paragraph 0038 of the specification. Appropriate correction is required.

Claim Objections

3. Claim 7, and 9 are objected to because of the following informalities: Lack of clarity and precision.

Consider claim 7, "The combination" is referred to, although the claim does not previously mention a combination or depend from a claim mentioning a combination. Please change "The combination" to "A combination". Appropriate correction is required.

Consider claim 9, an optical system according to claim 1 is referred to, and upon further examination, it appears that claim 9 is identical to claim 3. Also upon further examination, the examiner has determined that claim 9 was probably meant to depend from claim 7. For examination sake, the examiner will interpret "An optical system according to claim 1" to read, "An optical system according to claim 7". Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1, 2, 7, 8, 13, 14, 15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al.(US Patent Application Publication 2002/0012045) in view of Hwang(US Patent 6,654,053).

Consider claim 1, Nomura et al. teaches:

An optical system(figures 1-3, paragraphs 33-40) comprising:

A camera("digital camera", 31, figure 3) having an object plane(inherent in a camera, the object plane is a plane containing the real or virtual object(i.e. the image produced by the microscope) in an optical system, such as the optical system of a camera), a close up lens("lens system", 11, figure 1) coupled to the camera(The lens system(11) is part of and optical attachment(1, figure 1, figure 3) that is coupled to the camera((31, figure 3), paragraph 40), a structure("C-mount adapter", 21, figure 2) coupled to the close up lens(11) and camera(31)(Paragraph 0040 details the coupling of lens, camera, and adapter. See also figure 3) that is capable of being coupled to an imaging optical system(microscope, 32, figure 3, paragraph 0040) having an image

plane(inherent in a microscope, the image plane is the plane in which an image produced by an optical system, i.e. the optical system of the microscope, is formed).

Nomura et al. also teaches, "An optical path 10 for letting an optical image from the microscope pass is provided inside the main body 2. Provided in the optical path 10 of the main body 2 is a lens system 11 which allows a image through the ocular inserting portion of the microscope to be formed at a specific position of the digital camera or the CCD camera attached to the main body 2", paragraph 0036.

If the object plane is perpendicular to the optical axis, the image plane will ordinarily also be perpendicular to the axis. However, Nomura et al. does not explicitly teach that the image plane of the microscope(32) is coincident with the object plane of the camera(31), or that the camera(31) performs auto focus.

Hwang teaches of a digital video camera that performs zoom and auto focus(figure 2, column 2, line 50 through column 4, line 11). Like Nomura et al., the digital camera of Hwang can be a CCD camera("CCD", 22, figure 2). Also like Nomura et al., Hwang is concerned with high-power magnification of an object(column 1, lines 6-12).

In addition to what Nomura et al. teaches, Hwang teaches of performing the auto focus function(column 3, lines 5-13). Hwang teaches that an auto focus motor(27) drives a focus lens contained in lens unit(21) in response to a zoom motor(26) driving a zoom lens contained in lens unit(21), allowing focusing of the magnified image. Hwang does this to address the problem of having a near object become out of focus when high-power magnification zooming is performed(column 1, lines 6-12). Hwang teaches

that a zoom lens varies the focal length of a lens through zooming(column 1, lines 15-17). Hwang also teaches that the zoom lens can vary the size of an image through zooming, and that an auto focus lens is used to keep the lens in focus while performing said zooming(column 1, lines 17-23).

Because the auto focus camera of Hwang can vary the magnification of an image by zooming in on an object, it is possible that the auto focus camera of Hwang could be used to magnify and perform auto focus on an image produced by the microscope and lens adapter system taught by Nomura et al., wherein the image produced by the microscope and lens system would be the object of the auto focus camera. Hwang uses auto focus to ensure that the image is in focus(i.e. to ensure that the object and image planes are coincident), and at a peak focus value(column 3, lines 40-44).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use the auto focus camera to ensure that the object plane of the camera and the image plane of the microscope are coincident as taught by Hwang as the camera(31) in Nomura et al. for the benefit of being able to magnify an image without the image becoming out of focus(Hwang, column 1, lines 6-12).

Consider claim 2, and as applied to claim 1 above, Nomura et al. further teaches that the said structure is a C-mount(A "C-mount adapter", 21, figure 2 is coupled to the attachment(1) containing the close up lens(11) and the camera(31), see figure 3, paragraphs 0038-0040).

Consider claim 7, Nomura et al. teaches:

The combination(figure 3, paragraph 0040) comprising a camera(31) having an object plane(inherent in a camera, the object plane is a plane containing the real or virtual object(i.e. the image produced by the microscope) in an optical system, such as the optical system of a camera), a close up lens(11) coupled to the camera(31), an imaging optical system(microscope, 32, figure 3, paragraph 0040) having an image plane(inherent in a microscope, the image plane is the plane in which an image produced by an optical system, i.e. the optical system of the microscope, is formed), a structure("C-mount adapter", 21, figure 2) coupling the close up lens(11) and camera(31) to said imaging optical system(32) (Paragraph 0040 details the coupling of lens, camera, and optical system(32). See also figure 3).

Nomura et al. also teaches, "An optical path 10 for letting an optical image from the microscope pass is provided inside the main body 2. Provided in the optical path 10 of the main body 2 is a lens system 11 which allows a image through the ocular inserting portion of the microscope to be formed at a specific position of the digital camera or the CCD camera attached to the main body 2", paragraph 0036.

If the object plane is perpendicular to the optical axis, the image plane will ordinarily also be perpendicular to the axis. However, Nomura et al. does not explicitly teach that the image plane of the microscope(32) is coincident with the object plane of the camera(31), or that the camera(31) performs auto focus.

Hwang teaches of a digital video camera that performs zoom and auto focus(figure 2, column 2, line 50 through column 4, line 11). Like Nomura et al., the digital camera of Hwang can be a CCD camera("CCD", 22, figure 2). Also like Nomura et al., Hwang is concerned with high-power magnification of an object(column 1, lines 6-12).

In addition to what Nomura et al. teaches, Hwang teaches of performing the auto focus function(column 3, lines 5-13). Hwang teaches that an auto focus motor(27) drives a focus lens contained in lens unit(21) in response to a zoom motor(26) driving a zoom lens contained in lens unit(21), allowing focusing of the magnified image. Hwang does this to address the problem of having a near object become out of focus when high-power magnification zooming is performed(column 1, lines 6-12). Hwang teaches that a zoom lens varies the focal length of a lens through zooming(column 1, lines 15-17). Hwang also teaches that the zoom lens can vary the size of an image through zooming, and that an auto focus lens is used to keep the lens in focus while performing said zooming(column 1, lines 17-23).

Because the auto focus camera of Hwang can vary the magnification of an image by zooming in on an object, it is possible that the auto focus camera of Hwang could be used to magnify and perform auto focus on an image produced by the microscope and lens adapter system taught by Nomura et al., wherein the image produced by the microscope and lens system would be the object of the auto focus camera. Hwang uses auto focus to ensure that the image is in focus(i.e. to ensure that the object and image planes are coincident), and at a peak focus value(column 3, lines 40-44).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use the auto focus camera to ensure that the object plane of the camèra and the image plane of the microscope are coincident as taught by Hwang as the camera(31) in Nomura et al. for the benefit of being able to magnify an image without the image becoming out of focus(Hwang, column 1, lines 6-12).

Consider claim 8, and as applied to claim 7 above, Nomura et al. further teaches that said structure is a C-mount(A "C-mount adapter", 21, figure 2 is coupled to the attachment(1) containing the close up lens(11) and the camera(31), see figure 3, paragraphs 0038-0040).

Consider claim 13, and as applied to claim 7 above, Nomura et al. further teaches that the imaging optical system("microscope", 32) is selected from the class consisting of video microscopes, zoom microscopes and CCTV lens(see figure 3, microscope(32) could be a zoom microscope or a video microscope).

Consider claim 14, Nomura et al. teaches:

An inspection system(figure 3, paragraph 0040) comprising:

a lens("microscope", 32, figure 3) operative to image light(inherent in a lens, A lens is a device that causes light to either converge and concentrate or to diverge), from a portion of interest in an object undergoing inspection(Microscopes are inherently used for image inspection.), at an image plane(inherent in a microscope, the image plane is

the plane in which an image produced by an optical system, i.e. the optical system of the microscope, is formed) of the lens(32);

an optical assembly(figures 1-3, paragraphs 33-40) including a camera("digital camera", 31, figure 3) having an object plane(inherent in a camera, the object plane is a plane containing the real or virtual object(i.e. the image produced by the microscope) in an optical system, such as the optical system of a camera), a close up lens("lens system", 11, figure 1) coupled to the camera((31, figure 3), paragraph 40), and a structure("C-mount adapter", 21, figure 2) coupled to the close up lens(11) and camera(31))(Paragraph 0040 details the coupling of lens, camera, and adapter. See also figure 3);

Nomura et al. also teaches, "An optical path 10 for letting an optical image from the microscope pass is provided inside the main body 2. Provided in the optical path 10 of the main body 2 is a lens system 11 which allows a image through the ocular inserting portion of the microscope to be formed at a specific position of the digital camera or the CCD camera attached to the main body 2", paragraph 0036.

If the object plane is perpendicular to the optical axis, the image plane will ordinarily also be perpendicular to the axis. However, Nomura et al. does not explicitly teach that the image plane of the lens(32) is coincident with the object plane of the camera(31), or that the camera(31) performs auto focus.

Hwang teaches of a digital video camera that performs zoom and auto focus(figure 2, column 2, line 50 through column 4, line 11). Like Nomura et al., the digital camera of Hwang can be a CCD camera("CCD", 22, figure 2). Also like Nomura

et al., Hwang is concerned with high-power magnification of an object(column 1, lines 6-12).

In addition to what Nomura et al. teaches, Hwang teaches of performing the auto focus function(column 3, lines 5-13). Hwang teaches that an auto focus motor(27) drives a focus lens contained in lens unit(21) in response to a zoom motor(26) driving a zoom lens contained in lens unit(21), allowing focusing of the magnified image. Hwang does this to address the problem of having a near object become out of focus when high-power magnification zooming is performed(column 1, lines 6-12). Hwang teaches that a zoom lens varies the focal length of a lens through zooming(column 1, lines 15-17). Hwang also teaches that the zoom lens can vary the size of an image through zooming, and that an auto focus lens is used to keep the lens in focus while performing said zooming(column 1, lines 17-23).

Because the auto focus camera of Hwang can vary the magnification of an image by zooming in on an object, it is possible that the auto focus camera of Hwang could be used to magnify and perform auto focus on an image produced by the microscope and lens adapter system taught by Nomura et al., wherein the image produced by the microscope and lens system would be the object of the auto focus camera. Hwang uses auto focus to ensure that the image is in focus(i.e. to ensure that the object and image planes are coincident), and at a peak focus value(column 3, lines 40-44).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use the auto focus camera to ensure that the object plane of the camera and the image plane of the microscope are coincident as taught by

Hwang as the camera(31) in Nomura et al. for the benefit of being able to magnify an image without the image becoming out of focus(Hwang, column 1, lines 6-12).

Consider claim 15, and as applied to claim 14 above, Nomura et al. further teaches that said structure is a C-mount(A "C-mount adapter", 21, figure 2 is coupled to the attachment(1) containing the close up lens(11) and the camera(31), see figure 3, paragraphs 0038-0040).

Consider claim 20, and as applied to claim 14 above, Nomura et al. further teaches that the imaging optical system("microscope", 32) is selected from the class consisting of video microscopes, zoom microscopes and CCTV lens(see figure 3, microscope(32) could be a zoom microscope or a video microscope).

7. Claims 3, 9, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. in view of Hwang as applied to claims 1, 7, and 14 above, and further in view of Kaneda(US Patent 5,854,711).

Consider claim 3 and as applied to claim 1 above, Nomura et al. teaches of an image sensor("CCD" paragraph 0035), but does not explicitly teach that the image sensor has a size not greater than about ¼ inch.

Like Nomura et al., Kaneda teaches of a digital imaging device(figure 9, column 12, lines 37-65). Also like Nomura et al., Kaneda teaches of using lenses("Variator

Lenses", 112) for magnification("arranged to be movable along an optical axis for varying magnification", column 12, lines 41-43). Furthermore, the device of Kaneda also contains a CCD image sensor("An image sensor(151) is a CCD or the like" column 12, line 56).

However, unlike Nomura et al. and Hwang, Kaneda teaches that the image sensor("CCD" 151, figure 9) has a size not greater than about ¼ inch(In column 9, lines 9-27, Kaneda teaches that modern image sensors have reduced in size from 1/3 inch to ¼ inch, and that the continuing trend suggests an even further reduction of size. This is relevant because power of the lenses of Kaneda has to be increased to cope with the decreased sensor size.)

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a CCD image sensor not greater than about ¼ inch as taught by Kaneda as the CCD image sensor in the camera taught by the combination of Nomura et al. and Hwang in order to improve the zoom ratio by continuing the upward trend of using smaller and smaller image sensors(column 9, lines 9-27).

Consider claim 9 and as applied to claim 7 above, Nomura et al. teaches of an image sensor("CCD" paragraph 0035), but does not explicitly teach that the image sensor has a size not greater than about ¼ inch.

Like Nomura et al., Kaneda teaches of a digital imaging device(figure 9, column 12, lines 37-65). Also like Nomura et al., Kaneda teaches of using lenses("Variator Lenses", 112) for magnification("arranged to be movable along an optical axis for

varying magnification", column 12, lines 41-43). Furthermore, the device of Kaneda also contains a CCD image sensor("An image sensor(151) is a CCD or the like" column 12, line 56).

However, unlike Nomura et al. and Hwang, Kaneda teaches that the image sensor("CCD" 151, figure 9) has a size not greater than about ¼ inch(In column 9, lines 9-27, Kaneda teaches that modern image sensors have reduced in size from 1/3 inch to ¼ inch, and that the continuing trend suggests an even further reduction of size. This is relevant because power of the lenses of Kaneda has to be increased to cope with the decreased sensor size.)

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a CCD image sensor not greater than about ¼ inch as taught by Kaneda as the CCD image sensor in the camera taught by the combination of Nomura et al. and Hwang in order to improve the zoom ratio by continuing the upward trend of using smaller and smaller image sensors(column 9, lines 9-27).

Consider claim 16 and as applied to claim 14 above, Nomura et al. teaches of an image sensor("CCD" paragraph 0035), but does not explicitly teach that the image sensor has a size not greater than about ¼ inch.

Like Nomura et al., Kaneda teaches of a digital imaging device(figure 9, column 12, lines 37-65). Also like Nomura et al., Kaneda teaches of using lenses("Variator Lenses", 112) for magnification("arranged to be movable along an optical axis for varying magnification", column 12, lines 41-43). Furthermore, the device of Kaneda

also contains a CCD image sensor("An image sensor(151) is a CCD or the like" column 12, line 56).

However, unlike Nomura et al. and Hwang, Kaneda teaches that the image sensor("CCD" 151, figure 9) has a size not greater than about ¼ inch(In column 9, lines 9-27, Kaneda teaches that modern image sensors have reduced in size from 1/3 inch to ¼ inch, and that the continuing trend suggests an even further reduction of size. This is relevant because power of the lenses of Kaneda has to be increased to cope with the decreased sensor size.)

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a CCD image sensor not greater than about ¼ inch as taught by Kaneda as the CCD image sensor in the camera taught by the combination of Nomura et al. and Hwang in order to improve the zoom ratio by continuing the upward trend of using smaller and smaller image sensors(column 9, lines 9-27).

8. Claims 4, 5, 10, 11, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. in view of Hwang as applied to claims 1, 7, and 14 above, and further in view of Mukai et al.(US Patent 6,266,490).

Consider claim 4, and as applied to claim 1 above, Nomura et al. teaches of a camera(31, figure 3) with a focal length("optical path length", paragraph 0035).

However, the combination of Nomura et al. and Hwang does not explicitly teach that the focal length is at least 60 mm.

Mukai et al. teaches of an antistatic viewfinder for use on an electronic of film camera(column 1, lines 5-9). Like Nomura et al., Mukai et al. teaches of using lenses to perform magnification(column 4, lines 50-58). Mukai et al. teaches that a particular lens("Eyepiece", 18) is used to perform magnification similar to a magnifying glass.

However, unlike Nomura et al., Mukai et al. additionally teaches that the focal length of the lens(18) is at least 60 mm("10 mm through 70 mm", column 4, lines 52-55). Mukai et al. teaches that focal lengths of this size are used to achieve large amounts("x3.6 to x25") of magnification.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a lens having a focal length of at least 60 mm as taught by Mukai et al. in the camera taught by the combination of Nomura et al. and Hwang in order to achieve large amounts of magnification to see very small objects such as dust and dirt, and thus be able to locate and remove them from the viewing area(column 4, lines 51-58, column 1, lines 11-31).

Consider claim 5, and as applied to claim 1 above, the combination of Nomura et al. and Hwang does not explicitly teach that the auto focus camera(31) has a focal length of at least 70 mm.

Mukai et al. teaches of an antistatic viewfinder for use on an electronic of film camera(column 1, lines 5-9). Like Nomura et al., Mukai et al. teaches of using lenses to

perform magnification(column 4, lines 50-58). Mukai et al. teaches that a particular lens("Eyepiece", 18) is used to perform magnification similar to a magnifying glass.

However, unlike Nomura et al., Mukai et al. additionally teaches that the focal length of the lens(18) is at least 70 mm("10 mm through 70 mm", column 4, lines 52-55). Mukai et al. teaches that focal lengths of this size are used to achieve large amounts("x3.6 to x25") of magnification.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a lens having a focal length of at least 70 mm as taught by Mukai et al. in the camera taught by the combination of Nomura et al. and Hwang in order to achieve large amounts of magnification to see very small objects such as dust and dirt, and thus be able to locate and remove them from the viewing area(column 4, lines 51-58, column 1, lines 11-31).

Consider claim 10, and as applied to claim 7 above, Nomura et al. teaches of a camera(31, figure 3) with a focal length("optical path length", paragraph 0035).

However, the combination of Nomura et al. and Hwang does not explicitly teach that the focal length is at least 60 mm.

Mukai et al. teaches of an antistatic viewfinder for use on an electronic of film camera(column 1, lines 5-9). Like Nomura et al., Mukai et al. teaches of using lenses to perform magnification(column 4, lines 50-58). Mukai et al. teaches that a particular lens("Eyepiece", 18) is used to perform magnification similar to a magnifying glass.

However, unlike Nomura et al. and Hwang, Mukai et al. additionally teaches that the focal length of the lens(18) is at least 60 mm("10 mm through 70 mm", column 4, lines 52-55). Mukai et al. teaches that focal lengths of this size are used to achieve large amounts("x3.6 to x25") of magnification.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a lens having a focal length of at least 60 mm as taught by Mukai et al. in the camera taught by the combination of Nomura et al. and Hwang in order to achieve large amounts of magnification to see very small objects such as dust and dirt, and thus be able to locate and remove them from the viewing area(column 4, lines 51-58, column 1, lines 11-31).

Consider claim 11, and as applied to claim 7 above, the combination of Nomura et al. and Hwang does not explicitly teach that the auto focus camera(31) has a focal length of at least 70 mm.

Mukai et al. teaches of an antistatic viewfinder for use on an electronic of film camera(column 1, lines 5-9). Like Nomura et al., Mukai et al. teaches of using lenses to perform magnification(column 4, lines 50-58). Mukai et al. teaches that a particular lens("Eyepiece", 18) is used to perform magnification similar to a magnifying glass.

However, unlike Nomura et al., Mukai et al. additionally teaches that the focal length of the lens(18) is at least 70 mm("10 mm through 70 mm", column 4, lines 52-55). Mukai et al. teaches that focal lengths of this size are used to achieve large amounts("x3.6 to x25") of magnification.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a lens having a focal length of at least 70 mm as taught by Mukai et al. in the camera taught by the combination of Nomura et al. and Hwang in order to achieve large amounts of magnification to see very small objects such as dust and dirt, and thus be able to locate and remove them from the viewing area(column 4, lines 51-58, column 1, lines 11-31).

Consider claim 17, and as applied to claim 14 above, Nomura et al. teaches of a camera(31, figure 3) with a focal length("optical path length", paragraph 0035).

However, the combination of Nomura et al. and Hwang does not explicitly teach that the focal length is at least 60 mm..

Mukai et al. teaches of an antistatic viewfinder for use on an electronic of film camera(column 1, lines 5-9). Like Nomura et al., Mukai et al. teaches of using lenses to perform magnification(column 4, lines 50-58). Mukai et al. teaches that a particular lens("Eyepiece", 18) is used to perform magnification similar to a magnifying glass.

However, unlike Nomura et al., Mukai et al. additionally teaches that the focal length of the lens(18) is at least 60 mm("10 mm through 70 mm", column 4, lines 52-55). Mukai et al. teaches that focal lengths of this size are used to achieve large amounts("x3.6 to x25") of magnification.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a lens having a focal length of at least 60 mm as taught by Mukai et al. in the camera taught by the combination of Nomura et al. and

Hwang in order to achieve large amounts of magnification to see very small objects such as dust and dirt, and thus be able to locate and remove them from the viewing area(column 4, lines 51-58, column 1, lines 11-31).

Consider claim 18, and as applied to claim 14 above, the combination of Nomura et al. and Hwang does not explicitly teach that the auto focus camera(31) has a focal length of at least 70 mm.

Mukai et al. teaches of an antistatic viewfinder for use on an electronic of film camera(column 1, lines 5-9). Like Nomura et al., Mukai et al. teaches of using lenses to perform magnification(column 4, lines 50-58). Mukai et al. teaches that a particular lens("Eyepiece", 18) is used to perform magnification similar to a magnifying glass.

However, unlike Nomura et al., Mukai et al. additionally teaches that the focal length of the lens(18) is at least 70 mm("10 mm through 70 mm", column 4, lines 52-55). Mukai et al. teaches that focal lengths of this size are used to achieve large amounts("x3.6 to x25") of magnification.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a lens having a focal length of at least 70 mm as taught by Mukai et al. in the camera taught by the combination of Nomura et al. and Hwang in order to achieve large amounts of magnification to see very small objects such as dust and dirt, and thus be able to locate and remove them from the viewing area(column 4, lines 51-58, column 1, lines 11-31).

9. Claims 6, 12, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. in view of Hwang as applied to claims, 1, 7, and 14 above, and further in view of Kaneda(US Patent 5,894,711) and Mukai et al.(US Patent 6,266,490).

Consider claim 6, and as applied to claim 1 above, Nomura et al. teaches of an image sensor("CCD" paragraph 0035), but does not explicitly teach that the image sensor has a size not greater than about ¼ inch. Nomura et al. also teaches of a camera(31, figure 3) with a focal length("optical path length", paragraph 0035), but does not explicitly teach that the focal length is at least 60 mm.

Like Nomura et al., Kaneda teaches of a digital imaging device(figure 9, column 12, lines 37-65). Also like Nomura et al., Kaneda teaches of using lenses("Variator Lenses", 112) for magnification("arranged to be movable along an optical axis for varying magnification", column 12, lines 41-43). Furthermore, the device of Kaneda also contains a CCD image sensor("An image sensor(151) is a CCD or the like" column 12, line 56).

However, unlike Nomura et al. and Hwang, Kaneda teaches that the image sensor("CCD" 151, figure 9) has a size not greater than about ¼ inch(In column 9, lines 9-27, Kaneda teaches that modern image sensors have reduced in size from 1/3 inch to ¼ inch, and that the continuing trend suggests an even further reduction of size. This is relevant because power of the lenses of Kaneda has to be increased to cope with the decreased sensor size.)

Mukai et al. teaches of an antistatic viewfinder for use on an electronic of film camera(column 1, lines 5-9). Like Nomura et al., Mukai et al. teaches of using lenses to perform magnification(column 4, lines 50-58). Mukai et al. teaches that a particular lens("Eyepiece", 18) is used to perform magnification similar to a magnifying glass.

However, unlike Nomura et al. and Hwang, Mukai et al. additionally teaches that the focal length of the lens(18) is at least 60 mm("10 mm through 70 mm", column 4, lines 52-55). Mukai et al. teaches that focal lengths of this size are used to achieve large amounts("x3.6 to x25") of magnification.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a CCD image sensor not greater than about ¼ inch as taught by Kaneda, and a lens having a focal length of at least 60 mm as taught by Mukai et al. in the camera taught by the combination of Nomura et al. and Hwang in order to improve the zoom ratio by continuing the upward trend of using smaller and smaller image sensors(Kaneda, column 9, lines 9-27), and to achieve large amounts of magnification to see very small objects such as dust and dirt, and thus be able to locate and remove them from the viewing area(Mukai et al., column 4, lines 51-58, column 1, lines 11-31).

Consider claim 12, and as applied to claim 7 above, Nomura et al. teaches of an image sensor("CCD" paragraph 0035), but does not explicitly teach that the image sensor has a size not greater than about ¼ inch. Nomura et al. also teaches of a

camera(31, figure 3) with a focal length("optical path length", paragraph 0035), but does not explicitly teach that the focal length is at least 60 mm.

Like Nomura et al., Kaneda teaches of a digital imaging device(figure 9, column 12, lines 37-65). Also like Nomura et al., Kaneda teaches of using lenses("Variator Lenses", 112) for magnification("arranged to be movable along an optical axis for varying magnification", column 12, lines 41-43). Furthermore, the device of Kaneda also contains a CCD image sensor("An image sensor(151) is a CCD or the like" column 12, line 56).

However, unlike Nomura et al. and Hwang, Kaneda teaches that the image sensor("CCD" 151, figure 9) has a size not greater than about ¼ inch(In column 9, lines 9-27, Kaneda teaches that modern image sensors have reduced in size from 1/3 inch to ¼ inch, and that the continuing trend suggests an even further reduction of size. This is relevant because power of the lenses of Kaneda has to be increased to cope with the decreased sensor size.)

Mukai et al. teaches of an antistatic viewfinder for use on an electronic of film camera(column 1, lines 5-9). Like Nomura et al., Mukai et al. teaches of using lenses to perform magnification(column 4, lines 50-58). Mukai et al. teaches that a particular lens("Eyepiece", 18) is used to perform magnification similar to a magnifying glass.

However, unlike Nomura et al. and Hwang, Mukai et al. additionally teaches that the focal length of the lens(18) is at least 60 mm("10 mm through 70 mm", column 4, lines 52-55). Nomura et al. teaches that focal lengths of this size are used to achieve large amounts("x3.6 to x25") of magnification.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a CCD image sensor not greater than about ¼ inch as taught by Kaneda, and a lens having a focal length of at least 60 mm as taught by Mukai et al. in the camera taught by the combination of Nomura et al. and Hwang in order to improve the zoom ratio by continuing the upward trend of using smaller and smaller image sensors(Kaneda, column 9, lines 9-27), and to achieve large amounts of magnification to see very small objects such as dust and dirt, and thus be able to locate and remove them from the viewing area(Mukai et al., column 4, lines 51-58, column 1, lines 11-31).

Consider claim 19, and as applied to claim 14 above, Nomura et al. teaches of an image sensor("CCD" paragraph 0035), but does not explicitly teach that the image sensor has a size not greater than about ¼ inch. Nomura et al. also teaches of a camera(31, figure 3) with a focal length("optical path length", paragraph 0035), but does not explicitly teach that the focal length is at least 60 mm.

Like Nomura et al., Kaneda teaches of a digital imaging device(figure 9, column 12, lines 37-65). Also like Nomura et al., Kaneda teaches of using lenses("Variator Lenses", 112) for magnification("arranged to be movable along an optical axis for varying magnification", column 12, lines 41-43). Furthermore, the device of Kaneda also contains a CCD image sensor("An image sensor(151) is a CCD or the like" column 12, line 56).

However, unlike Nomura et al. and Hwang, Kaneda teaches that the image sensor("CCD" 151, figure 9) has a size not greater than about ¼ inch(In column 9, lines 9-27, Kaneda teaches that modern image sensors have reduced in size from 1/3 inch to ¼ inch, and that the continuing trend suggests an even further reduction of size. This is relevant because power of the lenses of Kaneda has to be increased to cope with the decreased sensor size.)

Mukai et al. teaches of an antistatic viewfinder for use on an electronic of film camera(column 1, lines 5-9). Like Nomura et al., Mukai et al. teaches of using lenses to perform magnification(column 4, lines 50-58). Mukai et al. teaches that a particular lens("Eyepiece", 18) is used to perform magnification similar to a magnifying glass.

However, unlike Nomura et al. and Hwang, Mukai et al. additionally teaches that the focal length of the lens(18) is at least 60 mm("10 mm through 70 mm", column 4, lines 52-55). Nomura et al. teaches that focal lengths of this size are used to achieve large amounts("x3.6 to x25") of magnification.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a CCD image sensor not greater than about ¼ inch as taught by Kaneda, and a lens having a focal length of at least 60 mm as taught by Mukai et al. in the camera taught by the combination of Nomura et al. and Hwang in order to improve the zoom ratio by continuing the upward trend of using smaller and smaller image sensors(Kaneda, column 9, lines 9-27), and to achieve large amounts of magnification to see very small objects such as dust and dirt, and thus be able to locate

and remove them from the viewing area(Mukai et al., column 4, lines 51-58, column 1, lines 11-31).

10. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. in view of Hwang as applied to claim 14 above, and further in view of Knopp et al.(US Patent Application Publication 2004/0059321).

Consider claim 21, and as applied to claim 14 above, Nomura et al. teaches of an inspection system(see figure 3). However, the combination of Nomura et al. and Hwang does not explicitly teach that the inspection system is used to inspect printed circuit boards.

Like Nomura et al., Knopp et al. also teaches of an image inspection system(figure 1, paragraphs 67-73). Like Nomura et al., the image inspection system of Knopp et al. includes imaging means("video means", 19), multiple lenses("First Objective Lens Assembly", 17 and "Viewing lens", 63), and a microscope("surgical microscope", 86). The inspection system of Knopp et al. is in the form of a workstation(paragraph 0067) and is primarily used in laser surgery, which requires a large amount of precision.

However, in addition to the teachings of Nomura et al. and Hwang, Knopp et al. teaches that the inspection system(10, figure 1) can be used for semiconductor processing, wafer fabrication, and other micromachining techniques(paragraph 0068). Knopp et al. also teaches that the imaging system can be used to inspect and correct

errors in microprocessors and integrated circuits(paragraph 0032). One having ordinary skill in the art would easily understand that printed circuit boards involve the same type of micromachining techniques as wafers, microprocessors, and integrated circuits, and would thus require the same type of imaging system.

Therefore it would have been obvious to a person having ordinary skill in the art at the time of invention to use the imaging system taught by the combination of Nomura et al. and Hwang to inspect printed circuit boards as taught by Knopp et al. in order to inspect them, perform short repair, and correct errors, which would otherwise not be possible without a high performance imaging system(paragraph 0032).

Consider claim 22, and as applied to claim 14 above, Nomura et al. teaches of an inspection system(see figure 3). However, the combination of Nomura et al. and Hwang does not explicitly teach that the inspection system is used to inspect printed circuit boards.

Like Nomura et al., Knopp et al. also teaches of an image inspection system(figure 1, paragraphs 67-73). Like Nomura et al., the image inspection system of Knopp et al. includes imaging means("video means", 19), multiple lenses("First Objective Lens Assembly", 17 and "Viewing lens", 63), and a microscope("surgical microscope", 86). The inspection system of Knopp et al. is in the form of a workstation(paragraph 0067) and is primarily used in laser surgery, which requires a large amount of precision.

However, in addition to the teachings of Nomura et al. and Hwang, Knopp et al. teaches that the inspection system(10, figure 1) can be used for semiconductor processing, wafer fabrication, and other micromachining techniques(paragraph 0068). Knopp et al. also teaches that the imaging system can be used to inspect and correct errors in microprocessors and integrated circuits(paragraph 0032).

Therefore it would have been obvious to a person having ordinary skill in the art at the time of invention to use the imaging system taught by the combination of Nomura et al. and Hwang to inspect integrated circuits as taught by Knopp et al. in order to inspect them, perform short repair, and correct errors, which would otherwise not be possible without a high performance imaging system(paragraph 0032).

Consider claim 23, and as applied to claim 14 above, Nomura et al. teaches of an inspection system(see figure 3). However, the combination of Nomura et al. and Hwang does not explicitly teach that the inspection system is used to inspect printed circuit boards.

Like Nomura et al., Knopp et al. also teaches of an image inspection system(figure 1, paragraphs 67-73). Like Nomura et al., the image inspection system of Knopp et al. includes imaging means("video means", 19), multiple lenses("First Objective Lens Assembly", 17 and "Viewing lens", 63), and a microscope("surgical microscope", 86). The inspection system of Knopp et al. is in the form of a

workstation(paragraph 0067) and is primarily used in laser surgery, which requires a large amount of precision.

However, in addition to the teachings of Nomura et al. and Hwang, Knopp et al. teaches that the inspection system(10, figure 1) can be used for semiconductor processing, wafer fabrication, and other micromachining techniques(paragraph 0068). Knopp et al. also teaches that the imaging system can be used to inspect and correct errors in microprocessors, microchips, and integrated circuits(paragraph 0032).

Therefore it would have been obvious to a person having ordinary skill in the art at the time of invention to use the imaging system taught by the combination of Nomura et al. and Hwang to inspect microchips as taught by Knopp et al. in order to inspect them, perform short repair, and correct errors, which would otherwise not be possible without a high performance imaging system(paragraph 0032).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert H. Cutler whose telephone number is (571)-270-1460. The examiner can normally be reached on Mon-Fri (7:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571)-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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